Public borrowing and crowding out in Spain (1768–1808)

Cyril Milhaud*

EHESS - PSE

Preliminary version.

*48 Boulevard Jourdan, 75014, Paris, France: cyril.milhaud@ens.fr. I would like to thank participants at all the seminars in which these ideas were trialled for their helpful comments. In particular, I am indebted to Jérôme Bourdieu, Alejandra Irigoin, Eric Monnet, and Gilles Postel-Vinay for their help and advice with this paper. Thanks are also due to the *Registro de la Propiedad de Madrid*. Any errors are my own.

1 Introduction

The impact of war on economic development is an important empirical question that is largely debated in economics. Economic history has brought many contributions to address this question, especially on the consequences of higher government spending and borrowing during the French Wars. In his seminal contribution on the British industrial revolution, Williamson attributes relatively slow economic growth and industrialization between the 1760s and the 1820s to a crowding out effect caused by the British government's debt financing of the French Wars.[1] Barro contended that government borrowing had a neutral effect on industrialization because it raised total savings to pay the future tax increase instead of reducing private investment.[2] Very recently, Ventura and Voth argued instead that Britain's debt accumulation had a positive effect on industrialization by accelerating structural change.[3]

In the crowding out model, expansionary public spending reduces investment spending by the private sector. The government is "crowding out" private investment by increasing the demand of loanable funds, thereby raising interest rates and depressing private investment. In the Spanish case, the crowding out effect was potentially of crucial importance since warfare has been a central feature of Spanish history at the turn of the nineteenth century. The dramatic increase in public spending at that time inevitably led — to cite Marichal's word — to the "bankruptcy of empire".[4] War borrowing often has been charged to have negative repercussions on the private credit market in Spain although its real impact has not been studied until now. The process of *desamortización* (disentail) of mainmort assets, initiated to finance the crown's debt, brought important structural changes. According to Rosa Congost, it was at the origins of many social transformations of the nineteenth century, among which the evolution of the structure of private credit markets was essential.[5]

Indeed, the main peculiarity of Spanish long-term credit markets was the predominance of ecclesiastical institutions as financial intermediaries and lenders.[6] They received more than 70 per cent of private annuities' revenue prior to the outset of the war in the 1780s. Two decades later though, they completely disappeared from the credit market panorama stopping their lending activities. The secularization of the market came along with the rise of another private debt instrument, the obligation.[7] However, the withdrawal of ecclesiastical institutions left a significant

[1] For the impact of British government spending during the French Wars, see Williamson (1984); Heim & Mirowski (1987); Black & Gilmore (1990); Clark (2001).

[2] Barro (1987).

[3] Ventura & Voth (2015).

[4] Marichal (2007). See also Fontana (1971).

[5] Congost (2009, p. 406).

[6] On the role of ecclesiastical institutions in the financing of the economy, a wide number of contributions can be cited. Among them, see Alvarez Vázquez (1987); Atienza López (1987); Barrio Gozalo (1994–95); Llopis Agelán (1980); López Martinez (1992); Marcos Martín (1999).

[7] The rise of the obligation to the detriment of long-term annuities has been documented by Congost (1991);

vacuum within the private credit market characterized by uncertainty and higher interest rates until the emergence of a new mortgage system in the second half of the nineteenth century.[8] This paper aims at providing quantitative and qualitative evidence of a crowding out effect due to war borrowing at the end of eighteenth-century Spain. In the second section, I examine the two key links in the crowding out argument. First, did the Spanish government's issuance of debt to finance warfare result in higher real interest rates? Second, did it cause a reduction of private investment?

Annual data for long-term interest rates and for government borrowing allow examination of the first link in the crowding out argument. Then, using original annual data on the volume of long-term private credit that we collected from the mortgage registry of Madrid (*Contaduría de Hipotecas de Madrid*), we examine the second link of the argument. In the third section, this paper analyses structural changes in the long-term private capital market. We argue that the dramatic increase in public borrowing at the end of the eighteenth century to finance warfare crowded out ecclesiastical institutions and shut down large part of the private credit market for long-term annuities for the decades to come. We also show that the withdrawal of ecclesiastical institutions in the 1790s came along with the rise of private obligations. Last section concludes.

2 Government borrowing, interest rates, and private investment (1768–1808)

At the time of the outset of the War of Independence of the United States, Spain had only a small national debt. In the next 30 years, the total debt stock rose dramatically. Between 1779 and 1808, debt increased sixfold, from approximately 1,200 million reales to 7,200 million.[9] To put these sums in perspective, the average annual income from ordinary taxes in Spain between 1784 and 1788, years of peace, was around 500 million reales.[10] The cost of the numerous wars that followed the War of Independence was largely responsible. Between 1779 and 1807, Spain found at war for 16 years, or almost two out of every three.[11] The expenditure on the armed forces was considerable, and constituted by far the single most important item of the government budget. In this period, spending on the Army and Navy was equivalent to 58% of total spending.[12] Once the debt service costs were added to this figure, there was hardly any money left for non-military spending.

The first step in testing the crowding out effect is to compute the size of government borrowing.

Díaz López (2001); Fernández de Pinedo (1985); Peset Reig & Blasco Gil (1992); Torre (1994); Tello Aragay (1994).

[8]Tello Aragay (2001).

[9]Fontana Lázaro (2001, pp. 198–9).

[10]Merino Navarro (1987).

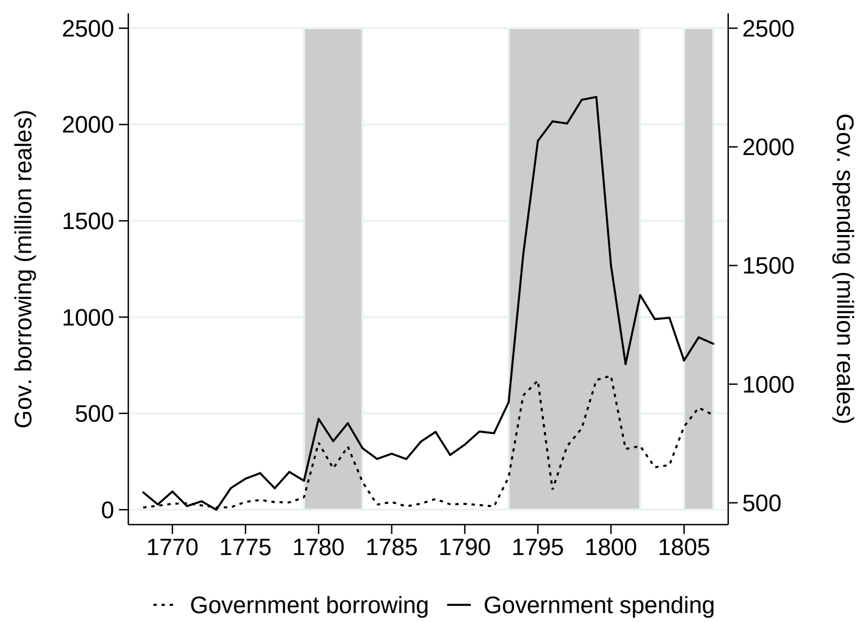
[11]See App. 4.

[12]Merino Navarro (1987).

Crowding out, and the scarce-factor-constrained vision of the economy generally, require measures of real resource flows. In the case of government borrowing, the appropriate measure should capture the real resource transfer to the government that results from the borrowing operations. Such information is available in Merino Navarro's book.[13] Table 1 summarizes the new loans taken out by the government in a given year in nominal values and real terms using Reher and Ballesteros' consumer price index as a deflator. The size of government borrowing during war years was huge compared to peace years.

Figure 1 shows the path of overall expenditure and of total borrowing. Shaded areas indicate wars. Dramatic spikes in total spending almost always coincided with major wars. The rise in government borrowing during the three periods 1780–83, 1793–1802, and 1805–7, occurred while Spain was either fighting overseas or at war with its neighbours. Once peace was concluded, borrowing levels typically declined to very small amounts.

Figure 1: Government borrowing and expenditure in Spain, 1768–1807



Sources: Based on Merino Navarro (1987). See Table 1.

The second step to examine the crowding out argument is to assess the volume of private investment. Like many other regions in Europe, the predominant instruments of long-term private credit in Spain were obligations (*obligaciones*) and redeemable annuities (*censos consignativos*).[14]

[13]Merino Navarro (1987).

[14]Fernández de Pinedo (1985, p. 298). Three types of *censos* co-existed in early modern Spain. The *censo enfiteútico* was a loan-lease contract. It was generally a lifetime or perpetual loan. Another legally defined *censo* was the *censo reservativo*, the sale of a property by credit. These were two forms of indirect credit. By the sixteenth century, a new form of *censo* became popular. It was the legally defined *censo consignativo* and the only one akin to

Table 1: **Nominal and real government borrowing, 1768–1804**

	Nominal Government Borrowing (thousands reales)	Real Government Borrowing (thousands reales)
1768	11,434	14,584
1769	20,609	26,712
1770	30,741	42,503
1771	33,675	48,262
1772	22,229	30,357
1773	12,351	16,775
1774	12,652	18,126
1775	40,621	59,758
1776	50,571	74,287
1777	39,507	58,184
1778	37,944	53,821
1779	**63,677**	**79,795**
1780	**348,129**	**401,880**
1781	**214,388**	**261,289**
1782	**327,898**	**444,909**
1783	**144,402**	**203,240**
1784	26,457	34,083
1785	39,971	46,370
1786	17,401	19,464
1787	31,295	34,685
1788	55,594	60,444
1789	28,012	29,548
1790	30,100	32,932
1791	24,328	29,100
1792	17,076	19,781
1793	**168,841**	**176,059**
1794	**593,313**	**615,310**
1795	**670,705**	**727,840**
1796	**104,041**	**103,704**
1797	**329,872**	**281,821**
1798	**422,296**	**346,286**
1799	**673,570**	**577,180**
1800	**695,328**	**578,716**
1801	**315,098**	**232,544**
1802	**330,664**	**202,241**
1803	220,412	108,164
1804	231,736	105,274
1805	**431,479**	**233,326**
1806	**529,495**	**395,071**
1807	**491,744**	**473,741**

Notes: "Nominal government borrowing" covers "*efectos extraordinarios*". Between 1780 and 1793, I added up "*negociación de vales y letras*". Figures are deflated using the Reher and Ballesteros' consumer price index. War years are in bold.
Source: Merino Navarro (1987).

The *censo* was a mortgage-backed loan supported by collateral that could be a real asset such as a land, a farm, a house, or another mortgage loan. In this contract, the lender could not demand the capital from the borrower: the latter repaid the capital whenever he wanted.[15] By contrast, if the loan was an obligation, the lender and the borrower mutually agreed on repayment by a certain date and the contract could not bear any interest.[16] In early modern Spain, *censos* were the dominant credit instruments since they were thus the only legal way to draft long-term credit contracts that involved interest at the time of usury prohibitions.[17] In addition, since the obligation was much more short term than the *censo* and mostly used for commercial credit, the difference in average duration implies that the financial stock was overwhelmingly *censos* credit.[18]

I extracted from the mortgage registry of Madrid the annual volume of new *censos*. This archive has never been used until now.[19] In order to foster the development of credit markets, the Spanish monarchy decided to create a public and universal system of information on mortgages.

This formal registration of mortgages started in 1768 with the creation of the mortgage registry by the Bourbons.[20] In these registries, each mortgaged loan had to be registered as soon as it was secured by collateral. In theory, all the mortgages had to be recorded in the mortgage registry but, in practice, these lien registries were not widely used at first, especially in Castile. However, over time, Spaniards came to register more and more their mortgaged assets. This archive is divided in 553 blocks, called *manzanas*, which correspond to blocks of properties in the city of Madrid (see Figure 2). I selected 191 *manzanas* where I recorded all the new *censos* between 1768 and 1808: 63 blocks are located mainly in South East Madrid where owners are in majority individuals (*particulares*) and 128 blocks are disseminated across Madrid and inhabited in majority by nobles.[21]

a mortgage (Quiroz, 1994, p. 197). In the rest of the paper, I will use the word *censo* instead of *censo consignativo* for convenience.

[15]The *censo* was drawn up in such a way that it represented a contract of sale of goods where the lender actually bought a rent sold by the debtor. This rephrasing made it possible to circumvent usury laws (Grafe, 2012; Fiestas Loza, 1993–94, p. 223–4).

[16]Fernández de Pinedo (1985, p. 299).

[17]See Fiestas Loza (1984, p. 640); Sánchez González (1991, p. 285); Fernández de Pinedo (1985, pp. 299–300); Ruiz Martín (2016); Tello Aragay (1994, pp. 13–5) and for a non exhaustive list of authors see Tello Aragay (1994, p. 10).

[18]In his study of the convent of Santa Clara de Estella, Joseba de la Torre observed that the average maturity of a *censo* fluctuated from 36 years prior to 1750 down to 24 years between 1750 and 1769 and 13 years around 1770–80 (Torre, 1994). These results are consistent with my data which shows an average maturity of 15 years in Madrid at the end of the eighteenth century. This average maturity seems similar to what we can observe in France since the the average maturity of a *rente constituée* is around 15 years throughout the eighteenth century (see Hoffman *et al.* (2001, p. 61) and Dormard (2005, p. 824)). By contrast, the obligation fell due in several months or years, in general between three months and eight years (Tello Aragay, 1994, p. 13).

[19]It is still conserved in the Registro de la Propiedad in Madrid. Under Franco's regime, mortgage registries archives across Spain were transferred to the Historical Archives of their respective regions. However, the archive of the mortgage registry of Madrid remained in the Registro de la Propiedad buildings which created some confusion about the location of this archive.

[20]For a complete history of mortgage registries, and in particular of the *Contadurías de Hipotecas*, until the end of the nineteenth century, see Serna Vallejo (1996).

[21]The prevalence of a social group within a block can be found in Pinto Crespo & Madrazo Madrazo (1995, p. 113).

Figure 2: Topographic map of the city of Madrid, 1768

Source: Archivo del Registro de la Propiedad de Madrid (hereafter ARPM).

This sample represents 34 per cent of the whole population, it includes poor areas as well as rich areas, and selected *manzanas* come from South, North, West, East and central Madrid, which makes it fairly representative.

The last two columns of Table 2 present the nominal volume of new *censos* per year, as well as the real volume using the Reher and Ballesteros' consumer price index. A cursory look at Figure 3 seems to support the crowding out argument for this period. Indeed, real private borrowing is generally lower at wartime when government borrowing is high.

In Table 3, I examine the relationship between the variation in real government borrowing and in real private borrowing. The growth of public borrowing do not have an immediate impact on private borrowing but the coefficient of lagged growth public borrowing is negative and significant at the five per cent level. For a one per cent increase in government borrowing, private borrowing decreases by 0.62 per cent one year later. There is no anticipation effect from private agents.

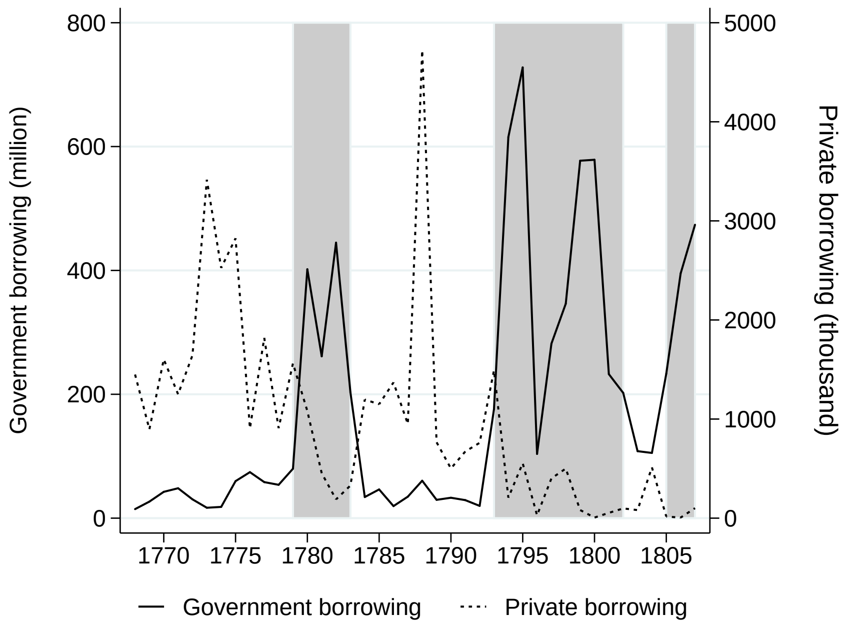
How can we explain the reduction in private lending? The decline in private borrowing in Madrid could have resulted from a decrease in the demand for loanable funds because of the war and not have been the mere consequence of supply constraints. Commercial credit had certainly been affected by the interruptions of trade during war years, but this type of credit was mainly short term. On the contrary, *censos* contracts, mostly involved in construction, concerned long-term credit, and this is not clear how construction would have been impacted in Madrid during naval wars. Since an important share of long-term credit is supposed to solve life cycle problems,

Table 2: Interest rates and private borrowing, 1768–1807

	Nominal Vales Yield (%)	Real Vales Yield (%)	Nominal Private *Censos* (reales)	Real Private *Censos* (reales)
1768			1,848,922	1,449,555
1769			1,162,372	896,770
1770			2,216,103	1,602,797
1771			1,791,063	1,249,714
1772			2,245,275	1,644,102
1773			4,639,018	3,415,477
1774			3,618,096	2,525,431
1775			4,155,051	2,824,396
1776			1,330,849	905,975
1777			2,679,457	1,819,351
1778			1,288,372	908,302
1779			**1,957,028**	**1,561,708**
1780			**1,248,279**	**1,081,322**
1781			**553,157**	**453,865**
1782	**4.21**	**5.71**	**256,888**	**189,326**
1783	**4.21**	**5.92**	**463,258**	**329,144**
1784	4.04	5.20	1,542,058	1,197,023
1785	4	4.64	1,333,693	1,149,643
1786	4	4.47	1,532,047	1,369,650
1787	4	4.43	1,052,912	949,989
1788	4	4.34	5,133,858	4,721,866
1789	4	4.21	803,333	766,299
1790	4	4.37	548,597	501,417
1791	4	4.78	804,508	672,568
1792	3.96	4.58	880,537	760,123
1793	**3.96**	**4.12**	**1,555,600**	**1,491,820**
1794	**4.12**	**4.27**	**214,075**	**206,421**
1795	**4.59**	**4.98**	**601,264**	**554,064**
1796	**4.54**	**4.53**	**28,165**	**28,256**
1797	**4.70**	**4.02**	**343,000**	**401,481**
1798	**4.76**	**3.90**	**410,000**	**499,995**
1799	**6.34**	**5.44**	**69,922**	**81,598**
1800	**12.50**	**10.40**	**4,948**	**5,945**
1801	**8.69**	**6.41**	**39,291**	**53,239**
1802	**4.87**	**2.98**	**60,000**	**98,100**
1803	6.15	3.01	40,000	81,510
1804	6.45	2.93	232,654	512,129
1805	**7.40**	**4.00**	**8,785**	**16,245**
1806	**7.40**	**5.52**	**3,944**	**5,285**
1807	**7.54**	**7.27**	**97,000**	**100,686**

Notes: Real yields and volume of credit are derived using the Reher and Ballesteros' consumer price index. War years are in bold.
Source: See text.

Figure 3: Annual volume of new *censos* in Madrid, 1768–1807



Sources: See Table 2 and Table 1.

especially to build a house, to set up a business, or to buy an office, lenders are usually older than young borrowers.[22] Therefore, one could reasonably assume that the demand for credit would vary according to the number of young people in Madrid. Let us admit that the number of young people is reflected by the number of marriages in the capital. If the number of marriages declined at the end of the eighteenth century, we can expect that the demand for credit would decrease. In contrast, the curve of marriages at the end of the century does not show any sign of decline between 1790 and 1809.[23]

The crowding out model explains the negative impact of government borrowing on private investment by higher real interest rates that an increasing demand for credit implies. Due to frequent wars between 1779 and 1808, borrowing needs were substantial. The usual ways to finance deficit, namely to resort to new taxes or donations, ran dry. Fear of riots, especially after the French Revolution, and ancient fiscal privileges of Spanish historic territories and towns restrained any leaning to increase revenues from taxes. The traditional remedy, custom duties and transfers from Spanish America, dropped down to a minimum because of the British blockade.[24]

New financial instruments facilitated the growth in public debt. Prior to the eighteenth century, most borrowing of the Spanish Crown was financed through *juros*. These perpetual bonds

[22]Hoffman *et al.* (2001, pp. 76–7).
[23]Pinto Crespo & Madrazo Madrazo (1995, p. 148).
[24]Liehr (1984, p. 558). See App. 4.

Table 3: Regression results: government borrowing and private investment

Independent Variable	Growth of Private Borrowing
Growth of public borrowing	-0.621**
$(n-1)$	(0.263)
Growth of public borrowing	0.005
(n)	(0.263)
Growth of public borrowing	-0.216
$(n+1)$	(0.264)
R^2	0.14
Observations	37

Notes: Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

were issued in the second half of the sixteenth century and the beginning of the seventeenth century, backed by a specific tax stream. In addition, short term borrowing in case of war by the armed forces produced so-called *asientos*, effectively short-dated promises to pay. At the end of the eighteenth century, Spain finally introduced a new type of annuities backed by the revenue of the Tobacco Monopoly ("Tobacco *censos*"). In parallel, it issued the *vales reales*, long-term annuities with a 20 years amortization scheme and carrying a yield of four per cent. The vales were first issued in 1780 and were the first form of paper money in Spain. The vales were used as currency, but since the unit value was large (600, 300, or 150 pesos each), they did not serve for retail purchases, salaries, or similar payments. They rapidly became the chief public debt instrument at the end of the eighteenth century.[25] Between 1779 and 1783, they already represented 68% of total borrowing.[26]

To examine the impact of government borrowing on interest rates, one potential problem that could affect the response was the usury laws. At the end of the eighteenth century, private interest rates were capped and could not exceed a three per cent ceiling. Such a ceiling would have enhanced the ability of the government to sell bonds whenever the market rate was pushed at the top or above the ceiling of three per cent. This could increase the wartime crowding out of private investment by diverting even more funds to the government when private borrowers could not pay the higher rates even if they wanted to. One solution to solve this problem consisted in finding one debt instrument that was not subject to usury laws. Unlike most private debt instruments, the vales were not subject to the usury laws, and were thus free to reflect conditions of stringency in the debt market. I extracted from Tedde the annual average price of vales between 1782 and 1808

[25]Issues of vales are recorded in App. 4.

[26]Torres Sánchez (2013, p. 405).

in the secondary market.[27] Tedde recorded the quotation of vales in the secondary market for the years 1782–1808.[28] The nominal yield is defined as the coupon yield divided by the average price of the vales on that year. To control for inflation, "real" variables have to be computed, corrected for changes in the price level. Thus the real interest rate will be defined as the nominal yield minus the percentage rate of change of the consumer price index. Column 2 of Table 2 presents the real vales rate, using the Reher and Ballesteros' consumer price index.[29] As for real private borrowing, the yields are generally higher during war years than during the years of peace immediately preceding and following. The assumption that a single interest rate can be used to represent the whole spectrum of interest rates, long and short term, public and private, is restrictive. Available data on interest rates is hard to find though and data on commercial interest rates is still lacking.[30]

Then, I instrumented the variation in the real yield on vales by the lagged growth of real government borrowing using two-stage least squares regressions to examine the impact of real interest rates on private borrowing. Table 8 reports results of the regressions.

The instrument is significant at the five per cent level. The Fisher statistic is rather low, which is coherent given the number of observations. A one per cent increase in real government borrowing is predicted to increase by 0.59 per cent the real yield on vales. In the second stage, the effect of the variation in the real yield on vales is not significant since the P-value equals to 0.12. This can be explained by the low number of observations which undermines the statistical power of the two-stage least squares. Figure 3 also helps to understand why the effect is not significant. Shocks on private borrowing can be easily identified. At each peak in government borrowing, private borrowing collapses which suggests a non-linear effect. During these periods, private borrowing is very low in any case. This explains why the variation in interest rates might not predict the variations of private borrowing. However, the overall model is suggestive that there is a negative relationship between the variation in the yield of vales and the growth of private borrowing.

The evidence on private market interest rates suggests a retraction of the supply in private credit markets as well. If supply is contracting with respect to the demand, credit would decrease. In that case, the interest should be drawn tight, the average rate should increase, and almost all private annuities (*censos*) should get closer to the maximum legal ceiling (three per cent). I recorded from my sample the interest rate bore by private *censos*. Figure 4 shows the evolution of this interest rate. We can notice that the War of Independence (1779–83) provoked an increase of the market interest rate from 2.5 per cent to its top ceiling three per cent. The increasing burden of the war debt from 1779 to 1808 resulted in the increase in private interest rates to their maximum legal ceiling. In 1799, the average interest bore by *censos* even exceeded this ceiling and reached 3.5 per cent.[31]

[27] Tedde de Lorca (1988, pp. 54, 234).

[28] App. 4. I assume that variations in the quotation of vales on the secondary market can be considered as a proxy of the primary market history.

[29] Reher & Ballesteros Doncel (1989).

[30] Annual data for short-term interest rates (commercial credit) is still unavailable for eighteenth-century Spain. One exception would be Cadiz between 1723 and 1788 (Nogues-Marco, 2011).

[31] On 12 September 1799, for example, the pious memory of Don Rodrigo de Herrera lent 44,000 reales to the convent of San Felipe el Real in Madrid with a 4% interest rate. ARPM, Contaduría de Hipotecas, Ma 203, 2484991,

Table 4: Regression results: government borrowing, interest rates, and private investment

Independent Variable	Growth Private Borrowing
OLS Estimates	
Variation Real Vales Yield	-0.434**
	(0.199)
R^2	0.17
2SLS Estimates	
Variation Real Vales Yield	-0.971
	(0.636)
Observations	25
Reduced Form Estimates	
Growth Public Borrowing	-0.53*
$(n-1)$	(0.273)
R^2	0.09
Observations	38
Independent Variable	Variation Real Vales Yield
First-Stage Estimate	
Growth Public Borrowing	0.593**
$(n-1)$	(0.255)
R^2	0.11
F-Stat	5.39
Observations	25

Notes: Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Figure 4: Market interest rate on *censos*, 1768–1807.

Source: See text.

The data on private *censos* described by Álvarez Vázquez showed the same trend.[32] After a decrease in private interest rates over the eighteenth century down to two per cent, the author noticed that they went up at the end of the century and the beginning of the nineteenth century to reach three per cent, their top ceiling. As a result, the decline in private long-term borrowing is better explained by a contraction on the supply side.

To summarize this section, government borrowing to wage warfare at the end of the Ancien Regime provoked a significant reduction of the volume of private credit. However, the econometric model failed to indicate that a rise in real interest rates significantly reduced private borrowing, even if market interest rates were higher during war years. Examination of the historical context in the next section will unveil the mechanisms through which the Spanish monarchy crowded out private investment.

48.
[32]Alvarez Vázquez (1987).

3 Crowding out, ecclesiastical credit, and the Spanish *desamortización*

In this section, I show that the historical evidence provides reasons why crowding out was expected in the first place. I examine who were the actors of the private credit market and who were the buyers of public debt. I discuss the potential effects on the private credit market of the *desamortización* of mainmort assets that aimed at bailing out government finances.

The Spanish treasury suffered from the cost of Spain's participation in not less than four wars between 1779 and 1807. Between 1785 and 1807, government spending more than doubled due to military expenditure (see Figure 1). As already said, during those years (1779–1808), government debt increased sixfold, passing from approximately 1,200 million reales to 7,200 million.[33] It was barely impossible to resort to new taxes to cover this deficit or to rely on Spanish American transfers due to British blockades. Borrowing was the only way to wage war.

At that time, ecclesiastical institutions represented a considerable source of capital, in which the government could tap into. These benefited from many sources of capital pledged in religious funds that they could subsequently lend out. Among these funds, pious works *obras pías*, patronage benefices *patronatos*, and chantries *capellanías* were of primary interest.[34] In 1794, an anonymous memorandum reported that the estates of benefices, confraternities, and pious foundations must be worth 3,000 million reales, and those of churches and religious orders another 4,500, more than the total public debt reported to Napoleon in 1808.[35]

Spain's entry into the War of Independence (1779–83) on the side of France and the new American nation initiated a period of financial turmoil. Very rapidly, Spain had to turn to new ways to raise capital to wage warfare. At that time, the idea was to benefit from mortmain capital, owned by ecclesiastical institutions and entails (*mayorazgos*), without causing prejudice to the privileged classes.[36] One solution was to attract these capital. In 1780, the Spanish Treasury first issued public redeemable annuities secured with the revenues of the Tobacco Monopoly in order to divert private capital owned by pious foundations and entails to the royal treasury. These were later called the *Tabaco censos*. Charles III decreed that all public deposits throughout Spain could

[33] Fontana Lázaro (2001, pp. 198–9).

[34] Pious works and chantries were the most popular ways of transferring capital. They differed from other sources since these were monetary trust funds established for specific purposes, for example in the case of chantries singing a stipulated number of masses over a certain time period for the spiritual benefit of a deceased person, generally the donor. On one side, money was donated or pledged to pious works or chantries by other institutions or all kinds of individuals; on the other, it was lent out by the ecclesiastical institution in charge in order to generate a regular income and to accomplish the donor's will (Wobeser, 1994, pp. 30–45).

[35] Herr (1989, p. 91). The debt of the Spanish Crown reported to Napoleon in 1808 was 7,198 million reales. The memorandum evaluates to 200 million pesos the estates of benefices, confraternities and pious foundations and 300 million pesos those of the secular and regular Church.

[36] *Mayorazgo* is the Spanish term for an arrangement giving the right of succession to a specific parcel of property associated with a title of nobility to a single heir. In Spain, it was a title of property, landed or funded.

be pledged on the Tobacco Monopoly, paying a three per cent interest rate.[37] Tobacco *censos* were clearly designed in order to divert capital from deposits of private and public money, namely capital from pious foundations, chantries, and entails.

The government allowed owners and administrators of those deposits to invest the capital in Tobacco *censos* on which the Treasury would pay three per cent a year for as long as the money was in its possession. This investment offered very advantageous conditions for the administrators of these funds and for the Spanish monarchy. For the king, it was an easy way to raise cheap capital. For the administrators of these funds, it was a safe and profitable investment. In the case of pious foundations or *patronatos*, administrators had to invest the capital in *censos* to generate a regular income and to accomplish the donor's will as it was an obligation stemming from the contract of the said foundation. As for entails, administrators could only legally invest capital in *censos* as well.[38] In 1780, the market interest rate of *censos* was much closer to 2.5 per cent than three per cent (see Figure 4). In addition, the Tobacco *censos* were pledged on the revenues of the Tobacco Monopoly that was considered as one of the safest income of the Crown. With a higher rate of return and better guaranties for the administrators of foundations and entails, Tobacco *censos* could only be a success.

Between 1780 and 1786, a total amount of 95.5 million reales was raised with Tobacco *censos*.[39]. This represented almost 14 per cent of the Spanish new public debt raised between 1779 and 1783. [40] These four years also concentrated 96 per cent of the total capital borrowed by the government through the Monopoly between 1779 and 1786.

Much of these public *censos* were signed in Madrid. They represented almost 50 per cent of the total amount issued throughout Spain for the years 1780–6 (see Table 5). The mortgage registry records in a separate section all the *censos* pledged on the Tobacco Monopoly that were signed in the capital.

The mortgage registry allows covering a much longer period than 1780–6 (see Appendix 4). In 1794, confronted to increasing war expenditure due to the outset of hostilities against the French Convention in 1793, the monarchy relied once more on the Tobacco Monopoly to raise capital. Between 1794 and 1795, it issued *censos* for 14 million reales just in Madrid, whereas it had almost not borrowed for 10 years since the end of the War of Independence. Then, until 1801 and the end of hostilities with the British, the crown regularly used the Tobacco Monopoly as a way to borrow cheap capital.

One of the effects of crowding out is the resource transfer to the government of saving that could have been invested in the private credit market. In Figure 3, the reduction of the volume of new private *censos* is clearly visible between 1780 and 1783 during the War of Independence when the Tobacco Monopoly started to borrow. The mortgage registry allows tracing back the

[37]Royal Decree (RD) 15–03–1780.

[38]Administrators had to send a request to royal jurisdictions in order to lend capital linked to an entail.

[39]Torres Sánchez (2015, p. 151)

[40]Torres Sánchez (2013, pp. 404–5). Three main public debt instruments were used in this period, the Tobacco *censos*, the *vales reales*, and the *vitalicios*.

Table 5: Tobacco *censos* signed in Madrid, 1780–6

	Tobacco *censos* Spain (reales)	Tobacco *censos* Madrid (reales)	%
1780	**47,430,963**	**16,941,241**	**35.7**
1781	**22,213,763**	**13,419,350**	**60.4**
1782	**15,224,263**	**9,203,350**	**60.5**
1783	**7,160,049**	**3,734,659**	**52.1**
1784	2,752,013	2,238,501	81.3
1785	582,938	118,926	20.4
1786	216,292	54,937	25.4
Total	95,580,281	45,710,964	47.8

Note: War years are in bold.
Sources: For Column 2, see Torres Sánchez (2015, p. 150). For Column 3, see text.

buyers of Tobacco *censos* signed in the city of Madrid. Table 6 records the lenders to the Tobacco Monopoly.

Table 6: Lenders to the Tobacco Monopoly in Madrid, 1780–1808

	Ecclesiastical institutions			Entails (*mayorazgos*)	Others[c]
	Pious foundations[a]	Others[b]	Total		
% total contracts	47.07	9.57	56.64	38.27	14.66
% capital lent	25.86	21.67	47.53	37.16	15.31

[a] *Aniversarios*, *beneficios*, *capellanías*, *memorias*, *obras pías*, *patronatos*.
[b] Convents and monasteries (men and women), brotherhoods, parishes, bishoprics, and church staff.
[c] Institutions (hospitals), lay individuals, and unknown.
Sources: See text.

Ecclesiastical institutions provided almost 50 per cent of the amount lent to the Tobacco Monopoly in Madrid. Within this group, pious foundations were the main sources of capital for public credit by providing 26 per cent of the total amount lent. In second position, the nobility through their entails provided another 35 per cent of the amount lent to the Monopoly.

Similarly, ecclesiastical institutions and the nobility were the main providers of private credit in eighteenth-century Madrid. In Table 7, I traced back the lenders between 1768 and 1808 within the long-term private credit market. Ecclesiastical institutions and the nobility provided 91 per cent of the capital lent on the long-term private credit market. Compared to the whole Spain, the share of ecclesiastical institutions is a bit lower than the figures provided by the Cadastre of

Ensenada (63 per cent versus 70 per cent). This is explained by the over representation of the nobility in Madrid as the economic and political capital.

Table 7: Lenders in Madrid (*censos*), 1768–1808

	Ecclesiastical institutions			Nobility			Others[c]
	Pious foundations[a]	Others[b]	Total	Entails	Nobles	Total	
% total contracts	42.71	20.11	62.82	24.46	2.85	27.31	9.87
% capital lent	22.70	20.30	43	40.47	7.89	48.36	8.64

[a] *Aniversarios*, *beneficios*, *capellanías*, *memorias*, *obras pías*, *patronatos*.
[b] Convents and monasteries (men and women), brotherhoods, parishes, bishoprics, and church staff.
[c] Institutions (hospitals), lay individuals, and unknown.
Sources: See text.

Crucially here, Tables 6 and 7 show that the lenders to public authorities were the same as the lenders in the private credit market. There is only one step to conclude that the drop in private investment during war years is due to the lenders' preference to invest in Tobacco *censos*, at least in Madrid. Capital from pious foundations and entails were diverted to Tobacco funds instead of being re-invested in the private credit market. The data that I extracted from the mortgage registry of Madrid on Tobacco *censos* allows looking more precisely at the impact of public borrowing on private credit activities. I generated a dummy variable taking value one if the Tobacco Monopoly borrowed in a given year.[41] Ordinary Least Squares regression was run to examine the effect of the introduction of Tobacco *censos* (public *censos*) in a given year on the volume of new private annuities (private *censos*). Table 8 gives the results.

Results show that private borrowing significantly reduced by half when the Tobacco Monopoly borrowed in Madrid. As mentioned earlier, Tobacco *censos* are a good proxy of government war borrowing. Tobacco *censos* absorbed large parts of private capital deposited in pious foundations and entails that has not been lent to private parties. Figure 5 clearly shows the different patterns of the private credit markets. On the one hand, private parties lent on average 1,547 thousand reales per year in the case the government did not sell Tobacco *censos*. On the other hand, whenever the government borrowed a given year through the Tobacco Monopoly, they lent only 733 thousand. This is not surprising since private *censos* and Tobacco *censos* can be considered as perfect substitutes. They were exactly the same instruments with the difference that Tobacco *censos* provided a higher rate of return and better guarantees. In addition, Tobacco *censos* are specially oriented to pious foundations and entails which are the main providers of private credit. Qualitative evidence supports that hypothesis. Many examples of redemptions of *censos* during those years stipulated that the redeemed capital had been pledged on the Tobacco Monopoly. In these cases, I could

[41] I did not take variations in Tobacco *censos* across years since the presence of modalities taking value zero distorted the regression.

Table 8: OLS regression results: real private borrowing and Tobacco *censos* in Madrid, 1768–1807

Dependent Variable	Real Private Borrowing			
	Coefficient	t-statistic	P value	Adjusted R^2
Independent Variable				
Dummy Tobacco *censos*	-814,380**	-2.50	0.017	0.12
Constant	1,547,131***	5.67	0.000	0.12

Notes: Figures are deflated using the Reher and Ballesteros' consumer price index. Significance levels: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Sources: See text and App. 4.

find the annotation: "considered paid and redeemed the said *censo* owned by the said memory of Don Ygnacio Buitrago, and free the said house, through the transfer that made the owner to the General Treasury of Her Majesty for a new *censos* secured by the Tobacco Monopoly".[42] It shows that once the capital of a *censo* was redeemed during the years of interest, it was more interesting to invest it in public *censos* (Tobacco *censos*).

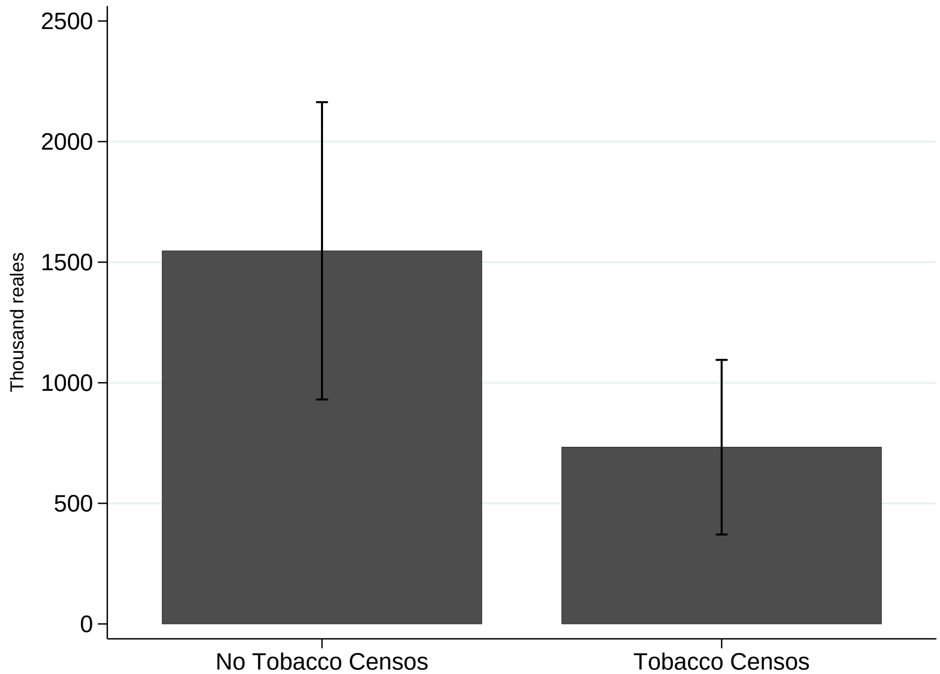
In parallel to Tobacco *censos*, the Spanish government borrowed via the creation of paper money, the so-called *vales reales* mentioned earlier. In 1780, it first issued 16,500 vales and made two more issues in 1781 and 1782. Between 1779 and 1783, the vales contributed for 68 per cent of the new public debt for a total amount of 450 million reales.[43] Until 1794, despite two further issues in 1785 and 1788 for 99 million to subsidize the building of the canals of Aragon and Tauste, vales were broadly quoted at face value. Actually, at the opening of the last decade of the century, Spain was in a strong financial position.

Spain's entry into the war against the French Convention in 1793 set off a new period of trial for its fiscal strength. Very rapidly, the monarchy found itself confronted to a growing annual deficit. The reply of the monarchy to the imperative needs for funds was to renew the creation of vales as for Tobacco *censos*. On 1 February 1794, the government issued 16,200,000 pesos, approximately 243 million reales. In parallel, the king signed along with this decree another that proclaimed the vales to be a "national debt contracted in the public interest" and created an amortization fund (*fondo de amortización*). In order to maintain the reputation of the vales, this fund was charged with extinguishing this debt and was provided with two sources of income. Municipalities were ordered to pay the fund 10 per cent of their incomes and the national Bank of Saint Charles was

[42]"*da por quitado y redimido el expresado censo perteneciente a dicha memoria de Don Ygnacio Buitrago, y por libre de el la Casa referida, mediante la entrega que hizo S.E. la Dueña en Tesoreria Mayor de S.M. para nueva imposicion sobre la Real Renta del Tabacco*". ARPM, Contaduría de Hipotecas, Ma 494, 2484277, 18.

[43]Torres Sánchez (2013, pp. 404–5).

Figure 5: Average private borrowing over Tobacco *censos*, 1768–1807



Sources: See text.

to contribute the fees it received for the export of specie from Spain.

Very soon, the government was forced to make two more issues of vales, one on 15 September 1794 for 18 million pesos and another on 15 March 1795 for 30 million pesos, respectively 270 and 450 million reales. To sustain the value of the vales, the king further provided new sources of income for the amortization fund. Among these, the clergy was to provide an annual subsidy of seven million reales out of its income from properties, including *censos* and, on 21 August 1795, the king decreed a capital levy of 15 per cent on all property acquired in the future by mortmain institutions (secular *vínculos*, entails, and ecclesiastical institutions). These three issues of vales brought 964 million reales to the royal treasury, three-quarters of the total deficit for the years 1793–96.[44]

Between 1796 and 1798, the government resorted mainly to free and forced loans to avoid overissue and paper money inflation.[45] However, the resumption of hostilities against Great Britain in 1796 severely undermined the credit worthiness granted to the monarchy. The impact on the vales quotation was immediate and, by the beginning of 1798, these quoted at a 15 per cent discount. On 9 March 1798, the king established an Amortization Fund (*Caja de Amortización*) as a separate institution with its own director to support the vales quotation. He charged it with redeeming and paying the interest on the government debt. It was assigned the sources of income

[44]Herr (1989, pp. 81–3).
[45]Barbier & Klein (1981, p. 325).

previously established for the first amortization fund created in 1794. However, the creation of a new fund did not have any effect on the royal credit and the discount on the vales even worsened from 15 to 17 percent in May. To get things worse, the predicted deficit for the year 1798 was 800 million reales and the government urgently had to find new sources of revenue. Confronted to the gravity of the situation, the king took extraordinary measures and initiated the first step of the long process of *desamortización*. On 19 September 1798, he decreed:

> In order to continue procuring the welfare of my beloved subjects by all possible means amid the present urgent needs of the crown, I have believed it necessary to dispose of a massive fund that can serve two objectives. One is to substitute for the vales reales another debt with lower interest and fewer problems. The other is to give relief to the industry and commerce by extinguishing the vales reales through more effective measures than those already adopted. Since my sovereign authority to make use of public establishments for these and other ends of the state is undisputed, I have resolved after mature consideration to alienate all the real property belonging to hospitals, hospices, houses of charity, homes of the aged, foundling homes, confraternities, pious memories, pious works, and lay benefices. The product of these sales will be deposited in my Royal Amortization Fund at three-percent interest per annum, as will the capital of any *censos* owed to these establishments and foundations that are redeemed.[46]

In brief, this decree ordered that liens and mortgages whose interest supported pious works, chantries, and the like should be redeemed and the proceeds to be loaned to the monarchy. It permitted persons whose properties were encumbered by *censos* in favour of these institutions to redeem them by depositing their capital value in the Amortization Fund in the name of the institution.[47] As a result, the capital was not re-lent to a private party but to the monarchy. Then, in 1801, capital endowments of *mayorazgos* and other secular entails were also targeted.[48] The owners of entails were not required to sell their lands, but they did have to deposit the capital received of a redeemed *censo* in the Amortization Fund.

Unfortunately for the crown, the announcement of the sale of entailed real assets did not restore its credit. On 8 April 1799, pressing financial needs led the crown to announce a new issue of vales for almost 800 million reales, the largest ever, to wage the deficit. The market value of vales fell between 30 and 45 percent below par in the first half of 1799 and one year later, they were being exchanged for little more than one quarter of their face value. In 1800, Charles IV decreed the creation of a new institution to collect and manage all the income assigned for the guarantee and amortization of the vales, entirely separate from the royal treasury. On 28 November 1804, the second phase of the consolidation even went one step further with the extension of the process of *desamortización* to the Spanish Empire.[49] Finally, between 1800 and 1808, the new Consolidation

[46] RD 19–09–1798.

[47] Also frequent was the establishment of a *censo perpetuo* as a permanent endowment without any loan being involved, that is why there are not taken into consideration here.

[48] Royal *Cédula* 17–04–1801.

[49] RD 28–11–1804.

Fund only redeemed vales totalling 300 million over the 2,193 million in existence.[50]

It is relatively difficult to study the proceeds of *desamortización* assets for the crown. Nevertheless, the total amount reported to Napoleon for the two funds in 1808 is 1,653 million reales.[51] This sum includes both money received by the monarchy for the sale of real properties and money received as redemption of *censos*.[52] R. Herr estimates that 4.5 per cent of the total ecclesiastical deposits came from redeemed *censos* totalling 112 million reales. However, this share hides important regional differences, since it goes up to 61.5 per cent in Catalonia.[53] In Madrid, redeemed *censos* from ecclesiastical deposits and from secular entails represented six per cent of the deposits in the two Funds amounting 14 million reales, which does not show a clear success of incentives to redeem the capital of *censos* considering that Tobacco *censos* signed in Madrid brought nearly 82 million reales.[54]

However, the impact on private lending was blatant. Talking about the Spanish American case, Grafe and Irigoin argued that the process of *desamortización* certainly "created severe interruptions in lending, mainly because the "dead hand" had been very much alive and active in banking".[55]

To assess the considerable impact of the consolidation laws on the volume of long-term private credit, Figure 3 is particularly enlightening. As we discussed earlier, the contraction of private credit between 1780 and 1783 is mainly due to the War of American Independence and Tobacco Monopoly issues. Then after a sharp decrease in 1790 that is mainly due to the presence of several outliers in 1789, the volume of new private *censos* declines significantly from 1794. On the same year, the Spanish government revived the creation of vales and the sale of Tobacco *censos* although it had almost not borrowed for 10 years. The perfect substitution with Tobacco *censos* and the alternative investment in vales undermined private investment. Figure 3 shows the progressive withdrawal of the *censo* debt instrument from the mid-1790s. This withdrawal started four years before the consolidation laws and became completely effective in 1800 where the capital amount of new *censos* was almost zero. Since 1794 and the creation of the first sinking fund, ecclesiastical institutions and entails could already understand what would be the future of their funds. Ecclesiastical assets came more and more under attack since 1767 and the suppression of the Society of Jesus. More generally, mortmain institutions, including entails, were severely criticized by contemporaneous Spanish *arbitristas*.[56] Reformers blamed them with preventing the multiplication of small farms and causing great harm to agriculture. The Spanish monarchy just implemented the ideas of reformers but certainly had not in mind the consequences of a withdrawal of monetary

---

[50] Herr (1989, p. 118).

[51] Herr (1989, p. 122).

[52] Unfortunately, we cannot distinguish between the two, and a fortiori between redeemable *censos* and perpetual ones.

[53] Herr (1989, p. 124).

[54] Idem. However, R. Herr estimates that 25 per cent of the ecclesiastical properties in Madrid were sold (Herr, 1989, p. 129).

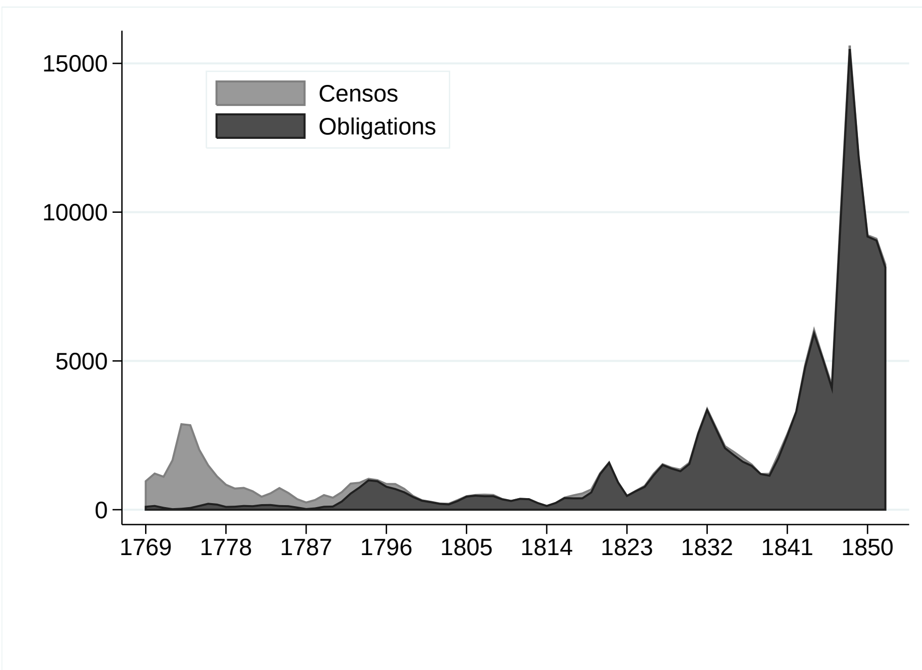
[55] Grafe & Irigoin (2013). On Spanish America, see also Chowning (1989); Liehr (1984); Greenow (1983).

[56] See for example Jovellanos (1795) or Vizcaino Pérez (1766).

funds attached to entails and pious foundations on the private credit market. This decline in the volume of new *censos* is also associated to a complete disappearance of ecclesiastical institutions on the private credit market. From 1794, ecclesiastical institutions almost stopped their lending activities. Then, from 1798, they were in any case forced to re-invest their monetary funds in the Consolidation Fund. *Censos* destiny was actually linked to ecclesiastical institutions and entails as they represented almost 96 per cent of the market (at least in Madrid). Since these institutions stopped lending to private parties because of the consolidation laws, the *censo* was dead.

At the same time, another debt instrument already mentioned earlier became the leading debt instrument. Concomitantly to the removal of ecclesiastical institutions and *censos* in the mid-nineties, I could notice in the mortgage registry records that obligations bore more and more an explicit interest rate, generally between 4 and 6 per cent. Ecclesiastical institutions did not use that instrument since their monetary funds could only be lent via *censos* and that obligations could not meet their need for a regular stream of income. As Figure 6 shows, the *censo* almost completely disappeared from credit markets in the 1790s. Instead, the obligation became the dominant debt instrument and was more and more used across time.

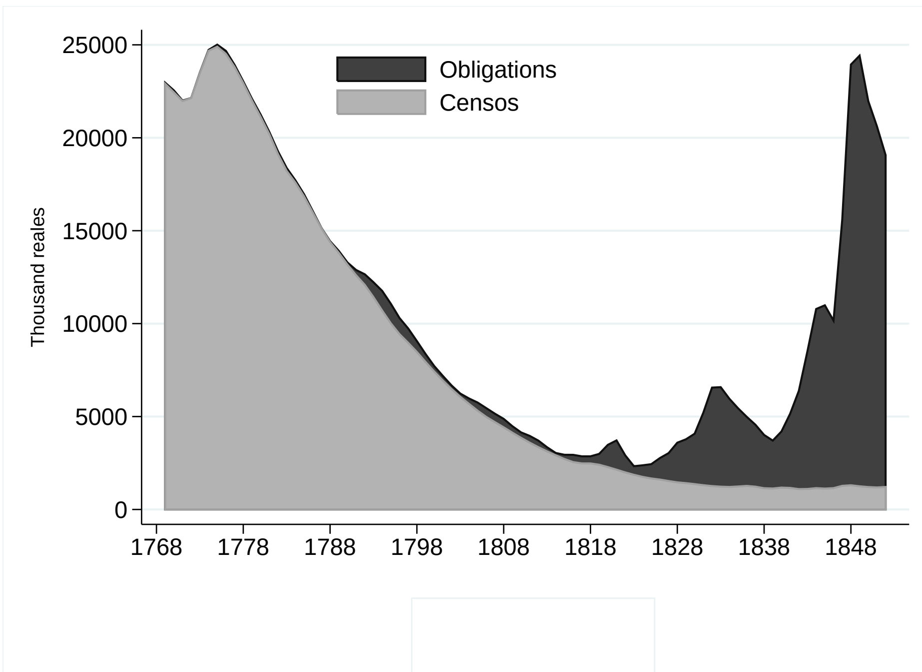
Figure 6: Real annual volume of new loans in Madrid, 1769–1852



Note: Three-year moving average. *Source*: see text.

Interestingly, it seems that the whole private credit market suffered considerably from the withdrawal of ecclesiastical institutions. During the 1790s, the obligation became the most popular debt instrument. However, it had a much shorter lifetime than the *censo* even if it transformed over time into a mid-term debt instrument. From the sample of obligations and *censos* that I constructed, the average maturity of an obligation increased from nine months between 1768 and 1777, to one year between 1778 and 1828, and two years between 1828 and 1853. On the contrary, the average lifetime of a *censo* was 14.8 years. This allows us to compute the stock of capital. The stock of capital in year t is defined as the stock of capital in year t-1 plus the capital lent in year t minus the capital that was paid off in year t. The new loans are directly given by the new *censos* and obligations recorded in the mortgage registry. I can deduce the amount of capital paid off each year from the inverse of the theoretical maturity "d" of each kind of debt instrument ($1/d$).[57] Figure 7 shows the stock of capital of *censos* and obligations between 1768 and 1853.

Figure 7: Real annual stock of mortgage credit in Madrid, 1768–1853



Source: See text.

It indicates that the collapse of the *censo* and of ecclesiastical institutions in the 1790s was dramatic for the private credit market. The stock of capital of the private credit market only got back to its 1770s level in the 1840s. In addition, the stock of obligations in the 1840s did not bear the same constraints as the stock of *censos* in the 1770s. Obligations had a shorter maturity than *censos* (two years versus 15 years). As a result, even if the amount of outstanding debt was equivalent in 1770 and in 1840, the result was quite different for the borrower. Facing the odds of frequent renewals, the stock of obligations, although it is similar in volume, is much more volatile than the stock of *censos* and implies huge uncertainties for the borrower.

The consolidation of the vales, by forcing ecclesiastical institutions to deposit their funds in the Consolidation Fund provoked a huge contraction of the private credit market. During four

[57] I followed Hoffman *et al.* (2001). For 1768, I took the average volume of new *censos* and obligations of the first five years and multiplied it by their respective maturities.

decades, the overall trend of the stock of private debt is divided by five. *Censos*, as well as the Church, almost disappeared from the private credit market and left a gap in long-term lending that no debt instruments or financial institutions could fill.[58]

4 Conclusion

This chapter provides a new stance on the impact of public borrowing on private investment. I showed that massive war borrowing at the end of the eighteenth century crowded out private credit. Beyond the effect of an increase in interest rates in a classical crowding out model, I analysed the historical evidence and political context that brought the monarchy to borrow massively and to initiate the process of the Spanish *desamortización*. Given the central role of ecclesiastical institutions in private credit markets, I studied the impact of this process on the volume of private lending.

The *desamortización* of ecclesiastical financial assets and secular entails shut down a large part of the private credit market. The effect is huge. After a domination of almost three centuries on Spanish credit activities, ecclesiastical institutions, as the major actor in the credit market, vanished in only two decades. Concomitantly, credit instruments changed: the *censo* became rapidly an antiquity and gave way to the rise of the obligation. The withdrawal of ecclesiastical institutions from the credit market severely undermined mortgage credit markets. For four decades, the overall stock of mortgage credit has been divided by five and mortgaged obligations only recovered the same volume as *censos* only in the 1840s. To my knowledge, there is nothing comparable elsewhere in Europe.

The sharp drop in long-term private lending is a first indication of a potential deleterious effect of the *desamortización* on the economy. The contraction of mortgage credit in the first half of the nineteenth century might have held back industrial development and obstructed Spain's economic development. We need more studies on the causes and consequences of this sudden withdrawal of key financial institutions.

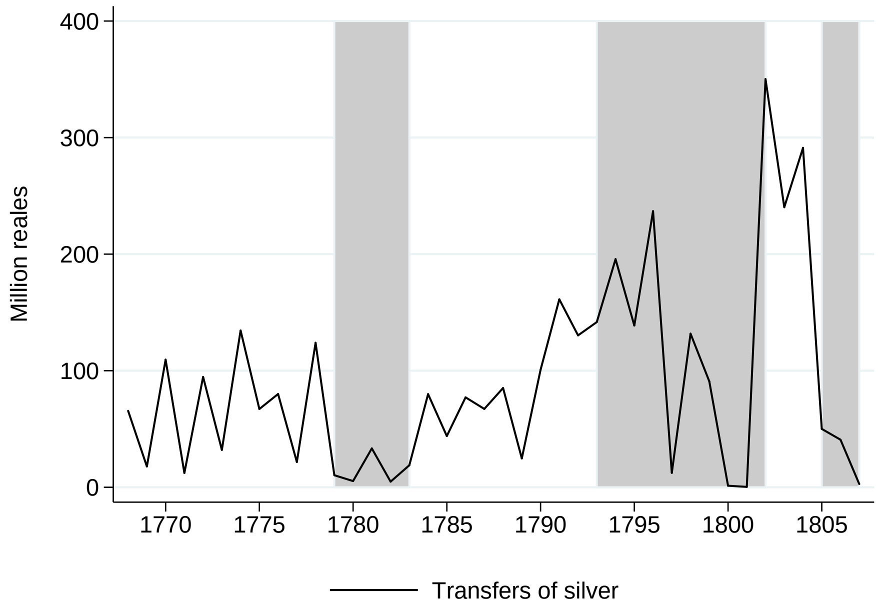
[58]These results have to be qualified though. Although *censos* have to be systematically recorded in the mortgage registry because they were pledged on real properties, obligations were not all secured on real assets, thereby underestimating the stock of obligations. One result remains obvious: the collapse of ecclesiastical institutions in the 1790s came along with the demise of the *censo*, the most popular long-term debt instrument at the time.

Appendices

Appendix A
Wars of Spain

War of Spain against	Years
Great Britain	1779–1783
France	1793–1795
Great Britain	1796–1802
Great Britain	1805–1807

Appendix B
Transfers of silver from Spanish America



Source: Based on Marichal (2007, pp. 268–9).

Appendix C
Issuance of vales and date of issuance

	600 pesos	300 pesos	150 pesos	Capital (reales)
30–09–1780	16,500			149,082,352
14–02–1781		17,667		79,813,270
22–05–1782		49,333		222,869,082
12–01–1794		53,333		240,939,670
29–08–1794	10,000		80,000	271,058,823
25–02–1795	15,000		140,000	451,764,705
06–04–1799	44,257	88,517		799,763,576
Total	85,757	208,850	220,000	2,215,291,482

Source: Tedde de Lorca (1987, p. 171).

Appendix D
Average monthly price of the vales, 1782–1808

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Average
1782	/	/	/	/	/	97	/	/	/	/	/	92	95
1783	90	95	95	94	93	95	96	97	96	96	96	96	95
1784	97	97	97	98	99	99	99	100	100	100	100	100	99
1785	100	100	100	100	100	100	100	100	100	100	100	100	100
1786	100	100	100	100	100	100	100	100	100	100	100	100	100
1787	100	100	100	100	100	100	100	100	100	100	100	100	100
1788	100	100	100	100	100	100	100	100	100	100	100	100	100
1789	100	100	100	100	100	100	100	100	100	101	100	100	100
1790	100	100	100	100	100	100	100	100	100	100	100	100	100
1791	101	100	101	100	100	100	100	100	100	100	100	100	100
1792	101	102	102	102	102	101	101	101	101	101	101	101	101
1793	101	100	100	100	100	100	100	101	101	101	101	101	101
1794	101	100	100	100	100	100	98	97	95	96	95	83	97
1795	85	92	87	89	85	84	82	84	92	87	86	88	87
1796	89	91	91	89	90	91	86	87	87	89	85	85	88
1797	84	84	84	84	84	84	85	85	85	85	85	85	85
1798	86	85	86	86	83	83	83	83	83	83	82	82	84
1799	74	67	67	61	55	55	64	/	/	/	/	/	63
1800	32	32	32	31	31	31	34	34	32	34	33	33	32
1801	35	35	38	43	42	41	48	43	43	45	70	70	46
1802	68	80	84	92	92	87	87	85	81	77	78	78	82
1803	79	79	74	68	62	55	59	57	56	54	70	67	65
1804	66	67	67	66	65	64	64	64	6	63	51	44	62
1805	49	48	52	56	61	61	61	63	53	42	49	55	54
1806	56	58	56	53	52	52	50	53	56	50	50	50	54
1807	53	53	53	53	53	54	58	56	53	50	50	50	53
1808	50	42	38	50	40	/	/	/	/	/	/	/	44

Note: Figures are in % of the nominal value. /: no data.
Source: Tedde de Lorca (1988).

Appendix E
Nominal and real volume of Tobacco *censos* in Madrid, 1780–1805

	Nominal Tobacco *Censos* (reales)	Real Tobacco *Censos* (reales)
1780	16,941,241	14,675,350
1781	13,419,350	11,010,577
1782	9,203,350	6,782,869
1783	3,734,659	2,653,475
1784	2,238,501	1,737,636
1785	118,926	102,514
1786	54,937	49,113
1787	1,500,000	1,353,375
1788	0	0
1789	3,300	3,128
1790	0	0
1791	0	0
1792	0	0
1793	150,000	143,850
1794	9,174,353	8,846,370
1795	5,000,131	4,607,621
1796	2,257,343	2,264,679
1797	2,816,104	3,296,250
1798	1,502,946	1,832,843
1799	6,938,574	8,097,316
1800	3,394,532	4,078,530
1801	2,778,335	3,764,644
1802	789,451	1,290,752
1803	81,254	165,575
1804	0	0
1805	20,137	37,238

Source: See text.

References

Alvarez Vázquez, J. A. 1987. *Rentas, precios y crédito en Zamora en el Antiguo Régimen.* Zamora: Colegio Universitario.

Atienza López, A. 1987. El préstamo en la sociedad tardofeudal: las rentas censales del clero regular zaragozano en el siglo XVIII. *Revista de Historia Jerónimo Zurita*, **55**, 67–104.

Barbier, J. A., & Klein, H. S. 1981. Revolutionary wars and public finances: The Madrid Treasury, 1784–1807. *The Journal of Economic History*, **41**(2), 315–39.

Barrio Gozalo, M. 1994–95. La proyección económica de la Iglesia en el mundo rural español durante el Antiguo Régimen. *Trocadero*, **6–7**, 7–34.

Barro, R. J. 1987. Government spending, interest rates, prices, and budget deficits in the United Kingdom, 1701–1918. *Journal of Monetary Economics*, **20**(2), 221–47.

Black, R. A., & Gilmore, C. G. 1990. Crowding out during Britain's Industrial Revolution. *The Journal of Economic History*, **50**(1), 109–31.

Chowning, M. 1989. The consolidacion de vales reales in the bishopric of Michoacan. *The Hispanic American Historical Review*, **69**(3), 451–78.

Clark, G. 2001. Debt, deficits, and crowding out: England, 1727–1840. *European Review of Economic History*, **5**(3), 403–36.

Congost, R. 1991. Enfiteusis y pequeña explotacion campesina en Cataluña, siglos XVIII–XIX. *Pages 63–87 of:* Saavedra, P., & Villares, R. (eds), *Señores y campesinos en la peninsula ibérica, siglos XVIII–XX*, vol. 2. Barcelona: Crítica.

Congost, R. 2009. De censatarios de la Iglesia a deudores del Estado. Más reflexiones sobre el proceso desamortizador y la revolución liberal en España. *Pages 377–407 of:* Bodinier, B., Congost, R., & Luna, P. F. (eds), *De la Iglesia al Estado: las desamortizaciones de bienes eclesiásticos en Francia, España y América Latina.* Zaragoza: Prensas Universitarias de Zaragoza.

Díaz López, J. P. 2001. Transformaciones institucionales del mercado de capitales en un medio agrícola mediterráneo: Almería (1769–1853). *Chronica Nova*, **28**, 129–57.

Dormard, S. 2005. Le marché du crédit à Douai aux XVIIe et XVIIIe siècles. *Revue du Nord*, **4**, 803–33.

Fernández de Pinedo, E. 1985. Del censo a la obligación: modificaciones en el crédito rural antes de la primera guerracarlista en el País Vasco. *Pages 297–305 of:* Garrabou, R., & Sanz, A. García (eds), *Historia agraria de la España contemporánea*, vol. 1. Barcelona: Crítica.

Fiestas Loza, A. 1984. La doctrina de Domingo de Soto sobre el censo consignativo. *Anuario de Historia del Derecho Español*, **54**, 639–54.

Fiestas Loza, A. 1993–94. El censo consignativo, según una fórmula castellana del Antiguo Régimen. *Anuario de Historia del Derecho Español*, **63**, 549–614.

Fontana, J. 1971. *La quiebra de la monarquia absoluta, 1814-1820: la crisis del Antigo Régimen en España.* Barcelona: Ariel.

Fontana Lázaro, J. 2001. *Hacienda y Estado en la crisis final del Antiguo Régimen español: 1823–1833.* Madrid: Instituto de Estudios Fiscales.

Grafe, R. 2012. *Distant tyranny: markets, power, and backwardness in Spain, 1650–1800.* Princeton: Princeton University Press.

Grafe, R., & Irigoin, M. A. 2013. Bounded Leviathan: fiscal constraints and financial development in the Early Modern Hispanic world. *Pages 188–227 of:* Coffman, D'Marris, Leonard, A., & Neal, L. (eds), *Questioning credible commitment. Perspectives on the rise of financial capitalism.* Cambridge: Cambridge University Press.

Greenow, L. L. 1983. *Credit and socioeconomic change in colonial Mexico: loans and mortgages in Guadalajara, 1720–1820.* Boulder, Co.: Westview Press.

Heim, C. E., & Mirowski, P. 1987. Interest rates and crowding-out during Britain's Industrial Revolution. *The Journal of Economic History*, **47**(1), 117–39.

Herr, R. 1989. *Rural change and royal finances in Spain.* Berkeley: University of California Press.

Hoffman, P., Postel-Vinay, G., & Rosenthal, J.-L. 2001. *Des marchés sans prix: Une économie politique du crédit à Paris, 1660–1870.* Paris: Editions de l'EHESS.

Jovellanos, G. M. de. 1795. *Informe sobre el expediente de Ley Agraria.* Madrid.

Liehr, R. 1984. Endeudamiento Estatal y crédito privado: la consolidación de vales reales en hispanoamérica. *Anuario de Estudios Americanos*, **41**, 553–78.

Llopis Agelán, E. 1980. *Las economías monásticas al final del Antiguo Régimen en Extremadura.* Madrid: Universidad Complutense.

López Martinez, A. L. 1992. *La economía de las ordenes religiosas en el antiguo régimen: Sus propiedades y rentas en el Reino de Sevilla.* Sevilla: Excma. Diputación Provincial de Sevilla.

Marcos Martín, A. 1999. La actividad crediticia del clero regular castellano en la Edad Moderna. *Pages 69–103 of:* Landi, F. (ed), *Accumulation and dissolution of large estates of the regular clergy in Early Modern Europe.* Rimini: Guaraldi.

Marichal, C. 2007. *Bankruptcy of empire. Mexican silver and the wars between Spain, Britain and France 1760–1810.* Cambridge: Cambridge University Press.

Merino Navarro, J. P. 1987. *Las cuentas de la Administración central española, 1750–1820.* Madrid: Instituto de Estudios Fiscales.

Nogues-Marco, P. 2011. Tipos de cambio y tipos de interés en Cadiz en el siglo XVIII (1729–1788). *Estudios de Historia Económica*, **58**, 9–108.

Peset Reig, M., & Blasco Gil, Y. 1992. Redención y extinción de censos en el siglo XIX. *Saitabi: Revista de la Facultat de Geografia i Història*, **42**, 63–80.

Pinto Crespo, V., & Madrazo Madrazo, S. 1995. *Madrid, atlas histórico de la ciudad siglos IX–XIX*. Madrid: Lunwerg.

Quiroz, A. W. 1994. Reassessing the role of credit in late colonial Peru: censos, escrituras, and imposiciones. *Hispanic American Historical Review*, **74**(2), 193–230.

Reher, D. S., & Ballesteros Doncel, E. 1989. Precios y salarios en Castilla la Nueva, 1550–1900: un ensayo de reconstrucción. *Revista de Historia Económica*, **7**, 703–18.

Ruiz Martín, F. 2016. *La banca en España hasta 1782*. Pamplona: Urgoiti Editores.

Serna Vallejo, M. 1996. *La publicidad inmobiliaria en el derecho hipotecario histórico español*. Madrid: Centro de Estudios Registrales.

Sánchez González, R. 1991. El crédito rural: los censos (Estudio del préstamo censal en la comarca toledana de la Sagra en el setecientos). *Revista de Historia Económica*, **2**, 285–313.

Tedde de Lorca, P. 1987. Crisis del Estado y deuda pública a comienzos del siglo XIX. *Hacienda Pública Española*, **102–3**, 169–95.

Tedde de Lorca, P. 1988. *El Banco de San Carlos*. Madrid: Banco de España and Alianza Editorial.

Tello Aragay, E. 1994. El papel del crédito rural en la agricultura del Antiguo Régimen: desarrollo y crisis de las modalidades crediticias (1600–1850). *Noticiario de Historia Agraria*, **7**, 9–37.

Tello Aragay, E. 2001. El fin del crédito hipotecario censalista en España: ¿Una agonía demasiado larga? *Revista de Ciencias Sociales*, **21**, 63–93.

Torre, J. de la. 1994. Coyuntura económica, crédito agricola y cambio social en Navarra, 1750–1850. *Noticiario de Historia Agraria*, **7**, 109–29.

Torres Sánchez, R. 2013. *El precio de la Guerra. El Estado fiscal-militar de Carlos III (1779–1783)*. Madrid: Marcial Pons.

Torres Sánchez, R. 2015. *Constructing a fiscal-military State in Eighteenth-Century Spain*. New York, N.Y.: Palgrave Macmillan.

Ventura, J., & Voth, H.-J. 2015. *Debt into growth: how sovereign debt accelerated the first Industrial Revolution?* NBER Working Papers 21280, NBER Working Papers.

Vizcaino Pérez, V. 1766. *Discursos políticos, sobre los estragos que causan los censos, felicidades y medios de su extinción*. Madrid.

Williamson, J. G. 1984. Why was British growth so slow during the Industrial Revolution. *The Journal of Economic History*, **44**, 687–712.

Wobeser, G. v. 1994. *El crédito eclesiástico en la Nueva España, siglo XVIII.* Mexico: Universidad Nacional Autónoma de México.